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HISTORY AND SIGNIFICANCE OF AMERICAN WILDLIFE ^{1/}

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Original Wealth in Wildlife

Previous to the coming of the white settlers, North America possessed an abundance and variety of wildlife not surpassed by any other continent. There were reasons for this: Wildlife, like vegetation, is modified as its habitat changes and it varies in form and abundance according to climate, soil fertility, and altitude. North America, with its crest in the icy arctic and its base in the warm subtropical region of the Gulf of Mexico; with its Rocky Mountains in the West and its Alleghenies in the East; with its arid deserts, fertile plains, and well-watered valleys lying between, has within its boundaries almost every possible variation in temperature, precipitation, soil fertility, and vegetative cover. Altitudes range from ridges that are thousands of feet above sea level to depths of the Death Valley that are actually below sea level. Between the intense subzero temperatures of the arctic wastes and the moist, tropical climate of the Isthmus of Panama are recorded infinite gradations of climate and temperature.

This diversity results in amazing differences in the types of both fauna and flora. The tiny lichen clinging to a glacier-scored rock protruding above the arctic ice cap requires half a century for a few inches of

^{1/} Author's note: Prepared especially for use in schools, this will be followed by other chapters dealing with other phases of wildlife conservation and restoration.

growth, while along the Gulf the rank jungle springs up almost as rapidly as the axe and the machete can cut it down. The brown bear of Alaska--the largest meat-eating land animal, and the least shrew, weighing an ounce or less, are alike able to find precisely the conditions each requires in order to live. So does the California condor, the largest living bird, with a wing spread of almost 10 feet, and so also does the wren, scarcely as large as one's thumb. The narwhal, the sea lion, the polar bear, and the manatee, together with thousands upon thousands of other species, have their homes on the shores of a continent where Nature seems to have exerted her limitless capacity for providing accommodation for the greatest possible number and variety of creatures.

The white pioneers, explorers, and trappers saw such an abundance of game and other wildlife when they came to North America that they could not adequately describe it. They spoke of flights of pigeons so tremendous that they "darkened the sun for hours on end," but the phrase has little meaning today, because we ourselves have never seen such spectacles and can scarcely imagine what they were like. Their tales of bison herds that covered the prairie for mile after mile also fail to give us a picture of the sights that met the wondering gaze of those early travelers. When those men noted a flight of wild fowl, they actually saw millions of individual ducks and geese; when we of today observe a flight of wild fowl, we are fortunate indeed if it numbers a few thousands.

Abundance Unimpaired by Indians

Enormous numbers of birds and other forms of wildlife were present despite the fact that the aborigines who inhabited the continent lived principally upon the fish and game. One might think it strange that wildlife should have persisted in such overwhelming abundance under constant utilization for human needs, whereas it declined before another race of men who lived principally upon agricultural products--upon grain, vegetables, milk, and the meat of domestic animals. When we examine the facts underlying this apparent inconsistency we shall find the answer to the conundrum in the different ways the two races used the land--the primordial domain of the native fauna.

The American Indians were gardeners but not farmers. In their small primitive plots they cultivated beans, corn, and tobacco, but in such limited quantities that had their families been compelled to depend upon these products alone, they would have starved. For food and clothing they depended for the most part upon wildlife and uncultivated native plants.

Then, too, the Indian population was sparse and shifting, scattered over the vast area of the New World. Their crude agricultural enterprises made little or no impression on the primeval environment so favorable to the production of wildlife. With this productivity unchecked, the combined effects of all the hunting, trapping, and fishing done by all the tribes resulted in no material decrease of the constantly replenished supply. If some catastrophe had wiped out the Indian population, there would have remained in a year or two only a few scarcely discernible signs to indicate the hundreds of years of its occupancy, other than a few shell mounds here

and there, the earthen burial mounds, the crude paintings in caves, and perhaps the smoke stains of cooking fires in a sheltered angle of a cliff. The Indian's trails and his gardens would alike have been overgrown and his rude huts and frail tepees disintegrated with the turns of the seasons as are the leaves and grasses of the passing year. The wild game and fur species, along with the forests, vegetation, rivers, lakes, aquatic life, and insect life, would soon have appeared unmarked and undamaged by the red man's long occupation of the land.

Exploitation by White Settlers

But after only three hundred years of occupancy, the white man in this country, were he to be suddenly exterminated, would leave behind him enduring scars and open wounds that might never heal. After thousands of years our concrete highways and our cities of stone and steel would be reduced and dissolved to some extent, but the geologist would still be able to find arid wastes, dust bowls, the scarred, eroded, treeless mountain sides, the choked and muddy streams, and the ruined marshland--melancholy monuments of the white man's civilization. The botanist would find valueless species of plant life growing where richly productive vegetation had once flourished, and the biologist would observe rats, cats, starlings, English sparrows, carp, and other such alien creatures usurping a land that was never meant for them. The entomologist would find other devastating evidences of our occupation and husbandry equally eloquent of our careless, wasteful, destructive habits.

Among the Indians it was the common practice to move to fresh hunting grounds whenever the old showed signs of becoming exhausted. Left unmolested, the former site was soon replenished, for its productivity and fertility had not been impaired. The Indian's gardening operations left a scar on the wilderness scarcely more permanent than that made by his canoe as he paddled along a lonely lake.

That he must never kill for sport was one of the commandments given to the Indian by the God who created the universe, according to the Iroquois legend. He was given dominion over the beasts of the field and the fowls of the air as in our own theology, but it was a provisional custodianship and tolerated neither waste nor abuse. The Indian never shared the white man's conception of sport; to provide meat and fish for himself and his family was a laborious task.

The white settlers and pioneers soon acquired the same attitude, no doubt, for it became the general practice among them to depend upon their professional hunters to bring the necessary supplies of game into the settlements, very much as the citizens of a modern community depend upon the butchers and the meat markets for that type of food. With the occupation of the land by the white settlers, however, wildlife began to diminish. The decrease was imperceptible at first, but it was definite nevertheless, for once the settlers had brought the primitive land under tillage or exploited it by industry, it long remained in that status. As they moved westward the new settlers subjugated more and more of the wild land, and the wildlife that remained in rear of the advancing line of frontiersmen and settlers was forced to adjust itself to a new environment--one that for most species was not nearly so favorable as it originally was.

The fertile ground that for ages had grown crops of wild game and fur animals was now required to grow corn, wheat, tobacco, beans, and cotton, and to support domestic flocks and herds. This condition, disastrous for many species, actually benefited others. The big-game species suffered first and most. While the bison, elk, deer, and bears were extirpated or forced to retire to areas remote from cultivation, some of the smaller creatures, including the quail, the rabbit, the raccoon, and the opossum, found the additional food supply grown by the farmer an encouragement to increase their numbers for a time and to extend their ranges.

Influence of Wildlife on Colonization and Settlement

The abundance of game and fur animals and of fishes aided the pioneers and settlers in establishing themselves in the new land; without it, indeed, rapid colonization would have been impossible. Supplies from Europe had to be brought over a long and hazardous ocean route, a communication line far too tenuous and inadequate to support even the smallest outpost of civilization against the rigors of the wilderness. For a long time after the land had been cleared and crops were being harvested, the settlers still found themselves dependent on the wild game and fur animals for a very considerable proportion of the essentials of life.

The white man's first knowledge of the nature of the great region lying west of the Mississippi came from the beaver trappers, or "mountain men"--the "long hunters"--so-called not because of their lean and rangy appearance, but from their custom of disappearing into the wilderness for months at a time. Resourceful, solitary men, they prided themselves on their ability to do anything that the Indian could do, and do it better. These adventurers were perfectly fitted for the hazardous task of exploring the unknown western wilderness, and the beaver was the lodestone that drew them across the Plains to the Rockies and across the Rockies to Mexico and to the Pacific Northwest. But for these men the entire region of Northwestern United States would now in all probability be held by Great Britain, for they resisted the invasion of the coveted territory by Canadian fur traders and trappers, and thus first established the claim of the United States to the great Oregon territory.

Early Traffic in Wildlife and Its Products

Except for the fur animals and the bison, there was for many years no direct exploitation of wildlife. It was at this time, however, that some of the great American fortunes were founded upon the fur trade, notably that of the Astor family. Their remote trading posts in a few years garnered the wealth of fur and left to posterity scarcely more than scattered remnants of what had been a tremendous resource. The pelts of fur animals and the hides of bison were commodities that would endure transportation from the wilderness to the settlements, but the flesh of game birds and mammals could not be sent back over the long trail.

Killing for the market did not become a serious factor in the reduction of game until stimulated by the growth of cities and towns nearer to the game fields and the development of railways. Traffic in game as food flourished after the Civil War and probably reached its peak in the 80's. During that time uncounted millions of passenger pigeons, prairie

chickens, grouse, ducks, geese, upland plover, snipe, woodcock, quail, and other food species were annually sent to market by gunners who, except for a few months in midsummer, shot and snared game the whole year round. It was during this time that the passenger pigeon was exterminated and certain other game species were so badly reduced that they have never since recovered.

Strange to say, market shooting seems to have enriched no one engaged in it. Today a pair of canvasback ducks taken from the Susquehanna Flats and illicitly offered for sale will bring the poacher from \$3 to \$5 if he can conclude the transaction without being caught by Federal or State law-enforcement officers, in which case the offender may have to pay a \$500 fine and spend 6 months in jail. Much of the game earlier taken for the then legitimate market spoiled on its way, and what was sound and saleable brought prices so low that the receipts often were not sufficient to pay the gunner's expenses. Ducks, geese, and other game birds sold for a few cents a pair, and the business was so badly organized and competition so sharp that the markets were nearly always glutted. The written accounts of Bogardus and other market shooters afford some indication of the extent of the slaughter. They also refer to the uncertainty of profit and describe market shooting generally as a hard, laborious, and often hazardous enterprise. Yet it was continued until sportsmen and conservationists at the beginning of the present century became alarmed at the destruction and sought legislation to prohibit traffic in game.

The American bison, or buffalo, as the animal is more generally called, achieved military significance in the history of the country. It has been estimated that there were not fewer than 75,000,000 of these animals making up the vast herds that roamed the continent at the time the white man was establishing the first colonies. Buffalo were not, as many now suppose, a purely western species. At that time their range extended clear to the Atlantic seaboard, as did that of the elk. The hide hunters brought the buffalo to the very verge of extinction, and though it seems strange to us today, they had the full consent and approval of the United States Government to encourage them in the slaughter. The buffalo was the Plains Indians' base of supply, and the existence of vast herds on the hunting grounds made the subjugation of the hostile tribes difficult if not impossible of accomplishment by the armed forces of the United States. It was clear to the strategists in Washington that there could be no peace with the Indian and no complete conquest of the rich western lands until the buffalo had been destroyed, for these roving herds were supplying the Indian with nearly everything he needed in the way of food, shelter, and equipment.

The Government accomplished its purposes by aiding the buffalo hunters with free ammunition and supplies and by giving them military protection whenever possible. When the Sharps "buffalo gun" and the skinning knife had finished their work the Indians had been driven into the reservations, and the buffalo--the few hundreds of them remaining--were gathered into preserves, most of which are now maintained by the same Government that a few years previously had so grimly sought annihilation of the animals. There they will remain unless in the unpredictable vicissitudes of time, and occasioned perhaps by the effect of land-utilization practices, great areas of their hereditary range are again restored to them and to the elk, deer, and antelope.

The swift and merciless exploitation of the buffalo only hastened an inevitable process, however, for in time the Indians must have retired before the constantly augmented numbers of settlers and the herds of domestic cattle would then have usurped the buffalo pastures. The history of the decline of this animal furnishes one of the most illuminating examples of the relationship existing between wildlife conservation and land utilization. Years of actual experience prove that these herds on Federal preserves can be increased indefinitely; that the buffalo might even be restored to original abundance locally, provided land were available.

The same is probably true of any form of wildlife. The principle is embodied in the national wildlife-restoration program now being conducted by the Biological Survey. This program seeks the establishment of a system of refuges totaling about 7,500,000 acres of land and water to furnish habitat for increasing the population of birds and animals and providing a surplus not now existent but one that will offset the losses from regulated shooting and other causes. Since 1924 the herd on the Biological Survey's Bison Range in Montana--but one of five similar ranges administered by the Bureau--has produced nearly 1,400 animals in excess of the carrying capacity of the range. That surplus and those from the other preserves, had they been released and allowed to reproduce under protection, would now have repopulated a considerable area. These increases, however, have contributed little or nothing to any broad restoration program, because the continued utilization of range land for other purposes leaves now no room at all for the hereditary monarch of the prairies.

Exploitation Era Closing

The era of wildlife exploitation is now drawing to a close. Its last stages are marked by the increasing determination manifested by State and Federal agencies, by sportsmen and conservationists, and by the general public to apply methods and administrative policies of a positive nature for preventing further unnecessary losses of wildlife and for restoring the valuable species to the maximum abundance consistent with the conditions of a modern civilization. For many native American species the change of attitude has come too late to save them from extinction. The vanished species include the great auk, the Pallas cormorant, the Labrador duck, the passenger pigeon, the heath hen, the Eskimo curlew, and the Carolina parakeet. Of the mammals, the giant mink has gone and the grizzly bear has been nearly exterminated in the United States proper. Other species-- the trumpeter swan, canvasback duck, redhead, upland plover, whooping crane, golden plover, and ivory-billed woodpecker, to list a few of those threatened--may yet be added to that much lamented category of treasures forever lost to us.

Even though some of these birds and mammals still number thousands and are common enough to suggest the idea of abundance, it is possible that these long years of abuse have already inflicted fatal damage through the reduction of breeding stock to a point where the annual increase by reproduction is less than the numbers annually destroyed by natural enemies and other causes. These inimical agencies include not only the predatory

creatures but climatic conditions, starvation, drought, and disease. These influences can seldom be defeated or nullified effectively by human interference, so that a species still apparently numerous may actually be doomed to extermination and be already beyond the hope of rescue by aid of human devices.

It is estimated that there are about 110,000 elk now remaining on the continent, 3,500,000 deer of all kinds, 70,000 bears, 50,000 wild turkeys, and possibly 40,000,000 or 50,000,000 wild ducks of all species. Comparison of these estimates with accounts of the wildlife resources present at the time of the coming of the white man affords a dismal realization of the extent of the damage done to what once was one of the richest resources of North America.

Wildlife Management the Remedy

But the situation is not so discouraging as these comparisons would seem to indicate on first analysis. The fact that after 300 years of continuous exploitation, neglect, and abuse there still remain considerable populations of nearly all common species demonstrates the amazing tenacity of the resource and suggests its profound recuperative power under more favorable conditions. W. L. McAtee, of the Biological Survey, gives a vivid description of the ability of most species to multiply when freed from destructive influences. He states, "The most important factor bearing upon wildlife management is the amazing reproductive capacity of living things. . . . to aid efforts to increase wildlife there is available a reproductive force almost explosive in its intensity."

Many attempts have been made to utilize this force in order that favored species--especially those classed as game--might increase. The Massachusetts colonies adopted ordinances to restrict the kill of certain species. Even the Indians maintained "bear preserves" whereon the bear, particularly valuable to them because of its fat, was never molested. Following settlement by the whites this type of effort to increase game by restricting the kill appears with increasing frequency, until at the opening of the present century nearly if not all the States and the Canadian Provinces had adopted elaborate statutory codes designed to protect wildlife and enable it to multiply. The system, however, is only partially effective. Failure to realize to the full the intended benefits has been due to lax enforcement of laws, which has been occasioned in turn by negligible appropriations of money, by political interference, and by a general apathy on the part of the public, all of which are attributable to lack of appreciation of the seriousness of the problem confronting State and Nation.

But a deterrent factor even more potent was the seeming inability of wildlife administrators to realize that the reduction of the annual toll of game taken by gunners was only one part of a successful restoration plan. The missing element was that of planning for land utilization and management in such way as to preserve to the greatest degree possible the environmental conditions without which the wild creatures could not exist even though otherwise freed from human persecution. It is easy for us now to realize, for example, that the drainage and reclamation of about 100,000,000 acres of marshland in the United States alone operated as effectively to pre-

vent the increase of waterfowl as did the guns of the market shooters. Similar conditions applied with equal force to other species. Cultivation, deforestation, lowering of water levels by drainage, and the pollution of many of the remaining natural reservoirs and streams placed upland game and other forms of wildlife under a tremendous handicap. Agriculture claimed not the fertile lands only--it invaded the submarginal areas as well--and the domain of the wild living things that required wilderness environment shrank away from the invader.

A Land-Use Problem

E. W. Nelson, a former Chief of the Biological Survey, was one of the first to point to the truth, when in 1915 he began to urge the immediate acquisition of marsh and water areas to be set aside as permanent sanctuaries for waterfowl and other forms of wildlife. It was not until 1928, however, that there was finally passed the Migratory Bird Conservation Act, which authorized appropriations of funds amounting to about \$8,000,000 to be expended over a 10-year period for the purpose advanced by Dr. Nelson. Only about \$1,300,000 has actually been appropriated thus far, but by the passage of the act, Congress gave its endorsement to a national policy of wildlife restoration and declared the preservation of habitat to be a fundamental part of the Government's restoration plan. This act has since been supplemented by others and by the allocation of emergency funds designed to carry out these purposes.

Not only Congress but other legislative and administrative bodies and the people generally at last began to appreciate the value of preserving and restoring wildlife and to understand its intimate relationship to land utilization. The long cycle of drought beginning in 1915 and continuing with an intensity almost unbroken for two decades was responsible for a new and mounting interest by the public in the condition of organic national resources of all kinds. Words and phrases descriptive of soil erosion, lowered water tables, and the destruction of vegetative cover had been meaningless terms and vague to the mind of the average citizen. Suddenly they became clothed with disturbing significances when the somber, baleful shadows of the dust storms drifted across the country, telling of the destruction of millions of tons of fertile soil, or when floods roared unchecked along the inland waterways like huge ruptured arteries spilling out the very life blood of the Nation. The conservationist now finds an interested and anxious audience where hitherto his warnings had been ignored or heard with tolerance and politely concealed contempt. The great hand of Nature was writing a message of foreboding; the symbols were whirling clouds of choking dust, thunderous torrents, dying cattle, and destitute humanity. The message means that the economic and social security of the Nation is utterly dependent upon the national ability to conserve and administer wisely the organic resources and products of the soil.

Wildlife is one of these.